

**Burrowing Owl Occurrence and Abundance on Prairie  
Dog Colonies in Buffalo Gap National Grassland**

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National Grasslands**

A Final Report

Submitted to

South Dakota Department of Game, Fish and Parks

By

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**ABSTRACT**

Burrowing owls (*Athene cunicularia*) in the Great Plains are associated with the declining prairie dog (*Cynomys* spp.) ecosystem. In South Dakota, burrowing owls are listed as a rare and sensitive species. Using a modified point-count method, we surveyed 178 black-tailed prairie dog (*Cynomys ludovicianus*) colonies for presence and abundance of burrowing owls on the U.S. Forest Service Buffalo Gap National Grasslands in southwestern South Dakota. We detected 229 adult burrowing owls on 101 prairie dog colonies. Occupancy of prairie dog colonies by burrowing owls averaged 2.3 owls/colony and increased with colony size. Colony size was positively correlated to number of owls and negatively correlated to owl density. Our results suggest that large prairie dog colonies are needed to maintain burrowing owl populations in South Dakota.

**INTRODUCTION**

At least one-third of the breeding range of the burrowing owl occurs in the Great Plains (Haug et al. 1993) and burrowing owls in the Great Plains typically nest in the burrows of prairie dogs (MacCracken et al. 1985a,b, Desmond 1991, Martell et al. 1993, Griebel 2000). Since the early 1900's, poisoning, disease, and development have reduced the range of the prairie dog dramatically, thus affecting associated species, such as burrowing owls. Desmond et al. (2000) recommended preservation of prairie dog colonies and better monitoring in changes of owl and prairie dog populations. Burrowing owls are listed as an S3/S4 rare species during breeding season in the state of South Dakota, which classifies it as a species potentially vulnerable to extinction and a concern in the long term. The U.S. Forest Service considers the burrowing owl a sensitive species, defined as "an animal identified by a regional forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers or density, or significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution." For management purposes, it is necessary to determine population trends of burrowing owls and their relationship to the fragmented prairie dog ecosystem. Our objective was to survey and map burrowing owl abundance on 210 black-tailed prairie dog colonies in southwestern South Dakota.

## METHODS

We used a modified point-count method (Howe et al. 1997) to count adult burrowing owls. Survey participants transected prairie dog colonies by truck, ATV, or on-foot, stopping approximately every 150 m to listen and scan for burrowing owls. Surveys were conducted May 15 – July 1 and only adult animals were counted. When possible, pairs were identified.

Approximate location of each owl was recorded on a map and transferred to a GIS database. Prairie dog colonies in the study area were GPS mapped in February 2002 and imported into a GIS database. Owl locations were digitized. Some colonies were surveyed more than once and the higher count is reported.

## STUDY AREA

The study area was located in eastern Pennington and western Jackson counties, South Dakota, and primarily occurred on the Wall Ranger District of the Buffalo Gap National Grasslands, administered by the U.S. Forest Service. Small, adjoining portions of Badlands National Park and private lands were included in the surveys. The climate of the area is semi-arid with an average annual precipitation of 39.9 cm. Mean annual temperature is 10.3 °C and monthly mean temperatures range from -4.6 °C in January to 25.5 °C in July. Topography is level but broken by small drainages generally running north to south. Soils are young and poorly developed with textural classes dominated by clay. Badlands buttes and formations are scattered throughout the landscape. Vegetation is mixed-grass prairie, dominated by western wheatgrass (*Agropyron smithii*), buffalograss (*Buchloe dactyloides*), and blue grama (*Bouteloua gracilis*).

## RESULTS

We surveyed 178 prairie dog colonies, totaling 5,644.5 acres, in the study area (Appendix 1.). Forty-four colonies were surveyed twice, although number of owls observed during the first and second surveys did not significantly differ ( $t_{43} = -0.581$ ,  $P = 0.564$ ). Total survey time was 4,739.0 minutes ( $\bar{x} \pm SE = 26.6 \pm 3.7$  min/colony). We detected 229 adult burrowing owls, including 42 confirmed pairs, on 101 of the 178 colonies surveyed. A pair was confirmed if two owls perched <5m apart and exhibited no aggressive behavior.

Occupancy of prairie dog colonies by burrowing owls increased with colony size (Figure 1.) and occupied colonies had a mean of 2.3 (SE = 0.2) owls per colony. Colony size was positively correlated to number of owls ( $r^2 = 0.308$ ,  $P < 0.001$ ) and negatively correlated to owl density ( $r^2 = 0.019$ ,  $P = 0.068$ ). We observed 31 other bird species during burrowing owl surveys (Appendix 2.).

## DISCUSSION

Burrowing owls were detected on more than half of the prairie dog colonies surveyed and throughout the Wall Ranger District (80 km East to West and 30 km North to South). Size of occupied colonies ranged from 1.0 – 799.9 ha. We found colony size was positively related to numbers of owls (Desmond 1991, Pezzolesi 1994, Desmond and Savidge 1996, Ekstein 1999, Griebel 2000) and negatively related to owl density (Desmond and Savidge 1996, Griebel 2000). Not surprisingly, our results suggest that

large prairie dog colonies are needed to maintain burrowing owl populations in South Dakota. If disease, such as sylvatic plague, were to compromise the prairie dog population, it would likely precipitate declines in burrowing owl populations.

#### ACKNOWLEDGEMENTS

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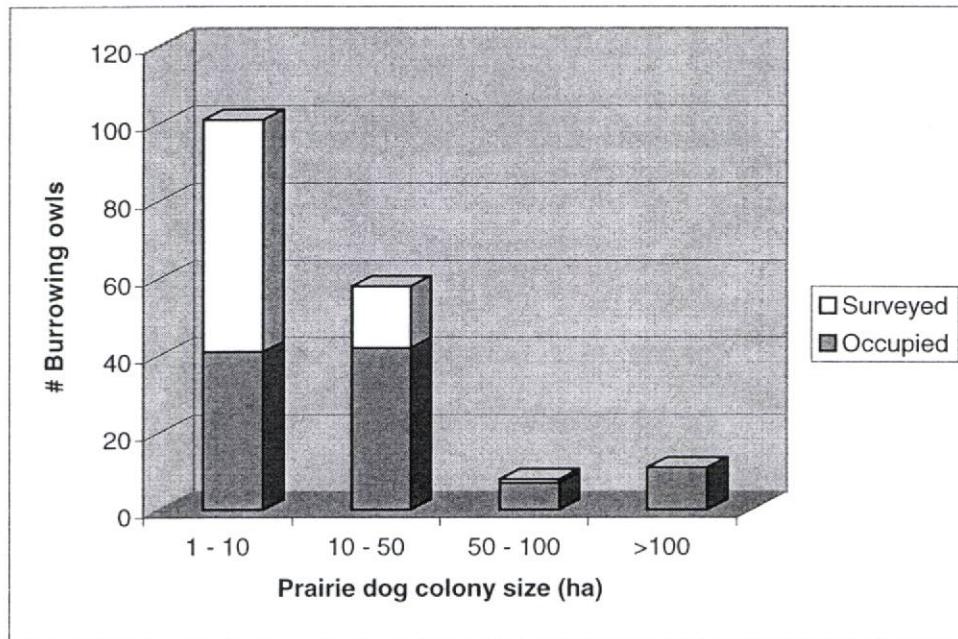


Figure 1. Occupancy of black-tailed prairie dog colonies by burrowing owls in Buffalo Gap National Grasslands, South Dakota.

Appendix 1. Data for burrowing owl occupancy of black-tailed prairie dog colonies in Buffalo Gap National Grasslands, South Dakota.

<b>Colony name</b>	<b>Hectares</b>	<b>Acres</b>	<b>Year GPS</b>	<b>Land Ownership</b>	<b>Surveyed 2002</b>	<b># Minutes surveyed</b>	<b>Acres/Minute</b>	<b># Owls</b>	<b>Owls/acre</b>
AG01	799.9	1975.8	2002	USFS	Y	363	5.44	8	0.004
AG02	124.8	308.2	2002	USFS	Y	111	2.78	2	0.006
AG03	189.1	467.2	2002	USFS/PRIV	Y	122	3.83	2	0.004
AG04	15.7	38.7	2002	USFS/NPS	Y	35	1.11	0	0.000
AG05	20.2	49.8	2002	USFS	Y	15	3.32	1	0.020
AG06	12.7	31.4	2002	USFS	Y	15	2.09	4	0.127
AG07	4.3	10.7	2002	USFS	Y	15	0.71	3	0.280
AG08	50.2	124.0	2002	USFS/NPS	Y	15	8.27	3	0.024
AG09	4.3	10.6	2002	USFS/NPS	Y	4	2.65	0	0.000
AG10	13.1	32.4	2002	USFS	Y	15	2.16	1	0.031
AG11	5.8	14.4	2002	USFS	Y	15	0.96	3	0.208
AG12	42.8	105.7	1999	USFS/PRIV	N	0		0	
AG13	21.4	52.9	2002	USFS	Y	15	3.53	2	0.038
AG14	48.1	118.9	2002	PRIVATE	N	0		0	
AG15	42.5	104.9	2002	USFS/PRIV	N	0		0	
AG16	9.4	23.1	2002	USFS	Y	13	1.78	1	0.043
AG17	37.0	91.5	2002	USFS/PRIV	Y	36	2.54	0	0.000
AG18	30.7	75.8	2002	USFS/PRIV	Y	53	1.43	3	0.040
AG19	22.3	55.1	2002	USFS	Y	48	1.15	1	0.018
AG20	31.7	78.2	2002	USFS	Y	41	1.91	3	0.038
AG21	23.9	59.0	2002	USFS	Y	26	2.27	3	0.051
AG22	65.5	161.7	1999	PRIVATE	N	0		0	
AG23	57.6	142.2	1999	PRIVATE	N	0		0	
AG24	11.9	29.4	2002	USFS	Y	19	1.55	0	0.000
AG25	0.5	1.3	2002	PRIVATE	Y	3	0.43	0	0.000
AG26	1.1	2.6	2002	USFS/PRIV	Y	3	0.87	0	0.000
AG27	1.1	2.7	2002	USFS	Y	5	0.54	1	0.370

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
AG28	1.8	4.5	2002	USFS	Y	10	0.45	1	0.222
AG29	1.1	2.7	2002	USFS	Y	8	0.34	0	0.000
AG30	9.0	22.2	2002	USFS	Y	9	2.47	1	0.045
AG31	5.2	12.8	2002	USFS/PRIV	N	0		0	
AG32	7.8	19.3	2002	USFS/NPS	N	0		0	
EP1	6.0	14.9	2002	USFS	Y	11	1.35	0	0.000
EP10	4.8	12.0	2002	USFS	Y	24	0.50	3	0.250
EP11	1.6	4.0	2002	USFS	Y	11	0.36	0	0.000
EP12	14.5	35.8	2002	USFS	Y	16	2.24	1	0.028
EP13	1.6	3.8	2002	USFS	N	0		0	
EP14	10.8	26.7	2002	USFS	Y	9	2.97	1	0.037
EP15	4.4	11.0	2002	USFS	Y	18	0.61	2	0.182
EP16	24.5	60.6	2002	USFS	Y	30	2.02	1	0.017
EP17	1.4	3.4	2002	USFS	N	0		0	
EP18	0.2	0.4	2002	USFS	N	0		0	
EP19	9.9	24.5	2002	USFS	N	0		0	
EP2	12.9	32.0	2002	USFS	Y	12	2.67	3	0.094
EP20	0.8	2.1	2002	USFS	Y	8	0.26	0	0.000
EP21	59.9	148.1	2002	USFS	Y	49	3.02	3	0.020
EP22	6.3	15.6	2002	USFS	Y	10	1.56	0	0.000
EP23	3.3	8.0	2002	USFS	Y	15	0.53	1	0.125
EP24	0.2	0.4	2002	USFS	N	0		0	
EP25	3.9	9.7	2002	USFS	Y	15	0.65	0	0.000
EP26	1.0	2.5	2002	USFS	N	0		0	
EP27	13.0	32.1	2002	USFS	Y	20	1.61	3	0.093
EP28	3.3	8.1	2002	USFS	Y	15	0.54	1	0.123
EP29	0.1	0.2	2002	USFS	Y	2	0.10	0	0.000
EP3	9.1	22.4	2002	USFS	N	0		0	
EP30	2.4	6.0	2002	USFS	N	0		0	
EP31	6.7	16.6	2002	USFS	N	0		0	

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
EP32	29.0	71.7	2002	USFS/PRIV	N	0		0	
EP33	2.5	6.1	2002	USFS	Y	7	0.87	2	0.328
EP34	0.1	0.2	2002	PRIVATE	Y	4	0.05	0	0.000
EP35	0.6	1.5	2002	PRIVATE	Y	4	0.38	0	0.000
EP36	4.1	10.2	2002	USFS	N	0		0	
EP4	6.9	17.1	2002	USFS	Y	13	1.32	1	0.058
EP5	1.4	3.5	2002	USFS	Y	6	0.58	0	0.000
EP6	7.9	19.6	2002	USFS	Y	20	0.98	2	0.102
EP7	7.8	19.3	2002	USFS	Y	10	1.93	5	0.259
EP8	0.8	2.1	2002	USFS	N	0		0	
EP9	6.5	16.0	2002	USFS	Y	24	0.67	2	0.125
HT01	233.3	576.1	2002	USFS/NPS	Y	328	1.76	6	0.010
HT02	80.9	199.9	2002	USFS	Y	158	1.27	1	0.005
HT03	49.8	123.1	2002	USFS	Y	101	1.22	0	0.000
HT04	9.7	23.9	2002	USFS	Y	27	0.89	1	0.042
HT05	9.6	23.8	2002	USFS	Y	27	0.88	2	0.084
HT06	4.3	10.6	2002	USFS	Y	17	0.62	1	0.094
HT07	19.5	48.2	2002	USFS	Y	37	1.30	1	0.021
HT08	7.4	18.2	2002	USFS	Y	26	0.70	2	0.110
HT09	33.1	81.7	2002	USFS	Y	120	0.68	4	0.049
HT10	1.0	2.5	2000	USFS	Y	6	0.42	1	0.400
HT11	12.6	31.0	2002	USFS	Y	31	1.00	0	0.000
HT12	14.2	35.0	2002	USFS/NPS	Y	6	5.83	0	0.000
HT13	0.4	0.9	2002	USFS	Y	1	0.90	0	0.000
HT14	10.1	24.8	2002	USFS/NPS	Y	12	2.07	2	0.081
HT15-16	13.1	32.4	2002	USFS	Y	15	2.16	2	0.062
HT17	22.5	55.5	2002	USFS	Y	24	2.31	2	0.036
HT18	0.6	1.5	2002	USFS	Y	8	0.19	0	0.000
HT19	6.9	17.0	2002	USFS	Y	23	0.74	2	0.118
HT20	42.5	105.0	2002	USFS	Y	57	1.84	4	0.038

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
HT21	9.4	23.3	2002	USFS	Y	19	1.23	2	0.086
HT22-23	7.9	19.6	2002	USFS	Y	13	1.51	2	0.102
HT24	3.4	8.5	2002	USFS	Y	8	1.06	0	0.000
HT25	12.0	29.5	2002	USFS	Y	12	2.46	0	0.000
HT26	1.6	4.0	2002	USFS	Y	6	0.67	1	0.250
HT27	15.8	39.1	2002	USFS	Y	43	0.91	3	0.077
HT28	19.2	47.4	2002	USFS	Y	45	1.05	4	0.084
HT29	4.2	10.4	2002	USFS	Y	12	0.87	0	0.000
HT30	3.5	8.6	2002	USFS	Y	12	0.72	0	0.000
HT31	17.9	44.2	2002	USFS/NPS	Y	32	1.38	2	0.045
HT32	7.2	17.9	2002	USFS	Y	15	1.19	0	0.000
HT33	0.7	1.8	2002	USFS	Y	6	0.30	0	0.000
HT34	1.8	4.5	2002	USFS	Y	10	0.45	2	0.444
HT35	3.0	7.5	2002	USFS/PRIV	Y	6	1.25	0	0.000
SC01	343.4	848.2	2002	USFS	Y	192	4.42	3	0.004
SC02	149.0	367.9	2002	USFS	Y	140	2.63	3	0.008
SC03	14.2	35.0	2002	USFS	Y	12	2.92	1	0.029
SC04	334.2	825.5	2002	USFS	Y	139	5.94	1	0.001
SC05	27.5	67.8	2002	USFS	Y	17	3.99	0	0.000
SC06	1.5	3.6	2002	USFS	Y	5	0.72	0	0.000
SC07	1.0	2.5	2002	USFS	Y	6	0.42	1	0.400
SC08	12.5	30.8	2002	USFS	Y	12	2.57	1	0.032
SC09	9.9	24.4	2002	USFS	Y	10	2.44	2	0.082
SC10	2.9	7.2	2002	USFS	Y	4	1.80	0	0.000
SC100	7.8	19.3	2002	USFS/PRIV	Y	9	2.14	1	0.052
SC101	13.8	34.1	2002	PRIVATE	Y	15	2.27	2	0.059
SC11	65.3	161.4	2002	USFS	Y	41	3.94	2	0.012
SC12	143.7	354.8	2002	USFS	Y	66	5.38	2	0.006
SC13	9.2	22.7	2002	USFS	Y	14	1.62	3	0.132
SC14	28.8	71.2	2002	USFS	Y	32	2.23	1	0.014

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
SC15	83.4	206.0	2002	USFS	Y	90	2.29	5	0.024
SC16	49.5	122.3	2002	USFS	Y	29	4.22	1	0.008
SC17	19.4	47.8	2002	USFS	Y	14	3.41	1	0.021
SC18	14.2	35.0	2002	USFS	Y	12	2.92	0	0.000
SC19	27.4	67.6	2002	USFS	Y	20	3.38	0	0.000
SC20	34.3	84.8	2002	USFS	Y	21	4.04	1	0.012
SC21	44.0	108.7	2002	USFS	Y	41	2.65	2	0.018
SC22	37.9	93.6	2002	USFS	Y	19	4.93	2	0.021
SC23-24-25-2	76.2	188.3	2002	USFS	Y	45	4.18	1	0.005
SC27	4.1	10.1	2002	USFS	Y	6	1.68	0	0.000
SC28	6.2	15.3	2002	USFS	Y	8	1.91	0	0.000
SC29-30	145.1	358.3	2002	USFS/PRIV	Y	54	6.64	2	0.006
SC31-32	707.8	1748.4	2002	USFS	Y	272	6.43	9	0.005
SC33	43.1	106.4	2002	USFS	Y	23	4.63	0	0.000
SC34-35-36-3	215.3	531.7	2002	USFS	Y	93	5.72	4	0.008
SC42	2.6	6.5	2002	USFS	Y	4	1.63	1	0.154
SC43-44-45	15.8	39.0	2002	USFS	Y	16	2.44	1	0.026
SC46	3.9	9.6	2002	USFS	Y	6	1.60	0	0.000
SC47-48	30.8	76.1	2002	USFS	Y	14	5.44	1	0.013
SC49	20.9	51.6	2002	USFS	Y	11	4.69	0	0.000
SC50-51	63.8	157.6	2002	USFS	Y	23	6.85	0	0.000
SC52	18.2	44.9	2002	USFS	Y	10	4.49	0	0.000
SC53-54	78.3	193.4	2002	USFS	Y	44	4.40	3	0.016
SC55	1.9	4.7	2002	USFS	Y	6	0.78	0	0.000
SC56	6.6	16.2	2002	USFS	Y	16	1.01	0	0.000
SC57	33.9	83.8	2002	USFS	Y	38	2.21	1	0.012
SC58	1.4	3.4	2002	USFS	Y	6	0.57	0	0.000
SC59	6.2	15.3	2002	USFS	Y	10	1.53	0	0.000
SC60	1.8	4.3	2002	USFS	Y	3	1.43	0	0.000
SC61	32.5	80.3	2002	USFS	Y	20	4.01	0	0.000

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
SC62	32.5	80.4	2002	USFS	Y	28	2.87	6	0.075
SC63	0.9	2.3	2002	USFS	Y	2	1.15	0	0.000
SC64	4.0	10.0	2002	USFS	Y	7	1.43	1	0.100
SC65	10.5	26.0	2002	USFS/NPS	Y	13	2.00	3	0.115
SC66	17.3	42.9	1999	PRIVATE	N	0		0	
SC67	57.1	141.0	2002	PRIVATE	N	0		0	
SC69	8.3	20.5	2002	USFS	Y	13	1.58	1	0.049
SC70	12.2	30.2	2002	USFS	Y	18	1.68	4	0.132
SC71	16.6	41.0	2002	USFS	Y	16	2.56	1	0.024
SC72-73	25.9	63.9	2002	USFS/PRIV	Y	20	3.19	0	0.000
SC74	22.6	55.8	2002	USFS	Y	22	2.54	1	0.018
SC79	1.2	3.0	2002	USFS	Y	5	0.60	0	0.000
SC80	7.0	17.3	2002	USFS	Y	10	1.73	0	0.000
SC81	0.1	0.3	2002	USFS	Y	1	0.30	0	0.000
SC82	0.3	0.6	2002	USFS	Y	1	0.60	0	0.000
SC83	2.5	6.1	2002	USFS	Y	6	1.02	0	0.000
SC84	2.2	5.4	2002	USFS	Y	5	1.08	0	0.000
SC85	0.3	0.6	2002	USFS	Y	1	0.60	0	0.000
SC86	1.9	4.8	2002	USFS	Y	5	0.96	0	0.000
SC87	3.5	8.7	2002	USFS	Y	2	4.35	0	0.000
SC88	1.5	3.7	2002	USFS	Y	5	0.74	1	0.270
SC89	2.7	6.6	2002	USFS	Y	6	1.10	2	0.303
SC90	3.9	9.6	2002	USFS	Y	6	1.60	0	0.000
SC91	0.5	1.2	2002	USFS	Y	1	1.20	0	0.000
SC92	7.7	19.1	2002	USFS	Y	8	2.39	2	0.105
SC93	2.3	5.7	2002	USFS	Y	6	0.95	3	0.526
SC94	15.9	39.2	2002	PRIVATE	N	0		0	
SC95	0.2	0.6	2002	USFS	Y	1	0.60	0	0.000
SC96	0.5	1.3	2002	USFS	Y	1	1.30	0	0.000
SC97	0.4	1.0	2002	USFS	Y	3	0.33	0	0.000

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
SC98	0.2	0.6	2002	USFS	Y	3	0.20	0	0.000
SC99	0.3	0.7	2002	USFS	Y	4	0.17	0	0.000
WR1	4.5	11.2	2002	PRIVATE	Y	5	2.24	0	0.000
WR10	1.0	2.5	2002	USFS	Y	3	0.83	0	0.000
WR11	0.7	1.8	2002	USFS	Y	3	0.60	0	0.000
WR12	1.0	2.6	2002	USFS	Y	5	0.52	1	0.385
WR13	10.6	26.3	2002	USFS	Y	10	2.63	0	0.000
WR14	45.1	111.3	2002	USFS	Y	32	3.48	5	0.045
WR15	27.2	67.1	2002	USFS	Y	15	4.47	2	0.030
WR16	1.2	3.0	2002	USFS	Y	3	1.00	0	0.000
WR17	9.5	23.4	2002	USFS/PRIV	Y	19	1.23	7	0.299
WR18	2.9	7.1	2002	PRIVATE	N	0	0	0	
WR19	0.1	0.1	2002	USFS	N	0	0	0	
WR2	1.9	4.6	2002	PRIVATE	Y	4	1.15	0	0.000
WR20	0.4	0.9	2002	PRIVATE	N	0	0	0	
WR21	7.3	18.1	2002	USFS	N	0	0	0	
WR22	0.3	0.9	2002	USFS	N	0	0	0	
WR23	4.9	12.1	2002	USFS	N	0	0	0	
WR24	0.3	0.7	2002	USFS	N	0	0	0	
WR25	23.6	58.2	2002	USFS	N	0	0	0	
WR26	1.7	4.3	2002	USFS	N	0	0	0	
WR27	3.1	7.6	2002	USFS	N	0	0	0	
WR28	0.4	1.1	2002	USFS	N	0	0	0	
WR29	0.1	0.2	2002	USFS	N	0	0	0	
WR3	0.9	2.2	2002	USFS	Y	4	0.55	0	0.000
WR30	5.7	14.2	2002	USFS	N	0	0	0	
WR31	3.6	8.9	2002	USFS	N	0	0	0	
WR32	0.2	0.4	2002	USFS	N	0	0	0	
WR33	1.0	2.4	2002	USFS	Y	3	0.80	0	0.000
WR34	5.0	12.4	2002	USFS	Y	6	2.07	0	0.000

Colony name	Hectares	Acres	Year GPS	Land Ownership	Surveyed 2002	# Minutes surveyed	Acres/Minute	# Owls	Owls/acre
WR35	13.3	32.9	2002	USFS	Y	15	2.19	2	0.061
WR36	5.2	12.8	2002	USFS	N	0		0	
WR37	7.7	19.0	2002	USFS	Y	11	1.73	0	0.000
WR4	0.2	0.5	2002	USFS	Y	2	0.25	0	0.000
WR5	2.5	6.1	2002	USFS	Y	7	0.87	0	0.000
WR6	8.5	20.9	2002	USFS	Y	19	1.10	3	0.144
WR7	4.2	10.5	2002	USFS	Y	19	0.55	4	0.381
WR8	8.1	19.9	2002	USFS/PRIV	Y	15	1.33	1	0.050
WR9	0.4	1.1	2002	USFS	Y	2	0.55	0	0.000

Appendix 2. Bird species observed during burrowing owl surveys on Buffalo Gap National Grasslands, South Dakota.

Common name	<i>Species</i>
Canada goose	<i>Branta canadensis</i>
Mallard	<i>Anas platyrhynchos</i>
Northern pintail	<i>Anas acuta</i>
American wigeon	<i>Anas americana</i>
Northern shoveler	<i>Anas clypeata</i>
Blue-winged teal	<i>Anas discors</i>
American coot	<i>Fulica americana</i>
American avocet	<i>Recurvirostra americana</i>
Killdeer	<i>Charadrius vociferus</i>
Long-billed curlew	<i>Numenius americanus</i>
Upland sandpiper	<i>Bartramia longicauda</i>
Wild turkey	<i>Meleagris gallopavo</i>
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>
Northern harrier	<i>Circus cyaneus</i>
Ferruginous hawk	<i>Buteo regalis</i>
Golden eagle	<i>Aquila Chrysaetos</i>
Turkey vulture	<i>Cathartes aura</i>
American kestrel	<i>Falco sparverius</i>
Mourning dove	<i>Zenaida macroura</i>
Common nighthawk	<i>Chordeiles minor</i>
Eastern kingbird	<i>Tyrannus tyrannus</i>
Western kingbird	<i>Tyrannus verticalis</i>
Horned lark	<i>Eremophila alpestris</i>
Cliff swallow	<i>Hirundo pyrrhonota</i>
American robin	<i>Turdus migratorius</i>
Mountain bluebird	<i>Sialia currucoides</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>
Western meadowlark	<i>Sturnella neglecta</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Lark bunting	<i>Calamospiza melanocorys</i>